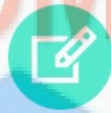
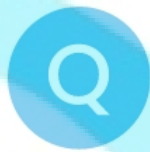


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QUIZZES

Practice test 1 Unit 6



10 Questions



7 min

Topics

Coulomb's Law (Coulomb's law in material media), Electric field and its intensity

Start Quiz

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

06 : 57



1/10



7 min



Hint

Q : Coulomb's force is represented by

A

$$F = \frac{kq_1q_2}{r^{-2}}$$

B

$$F = 4\pi\epsilon_0 \frac{q_1q_2}{r^2}$$

C

$$F = \frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{r^2}$$

D

$$F = \frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{r}$$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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7

06 : 55



2/10



7 min



Hint

Q : The electric field intensity at infinite distance from point charge is

A

infinite

B

zero

C

positive

D

negative

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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06 : 53



3/10



7 min



Hint

Q : The direction of electric field Intensity is



along the direction of charge



perpendicular to the direction of force



along the direction of force



none of these

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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06 : 50



4/10



7 min



Hint

Q : Static charges creates

A

electric field

B

magnetic field

C

both a and b

D

gravitational field

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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06 : 48



5/10



7 min



Hint

Q : In central region of a parallel plate capacitor the electric field lines are

A

perpendicular

B

parallel

C

orthogonal

D

curved

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

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06 : 44



6/10

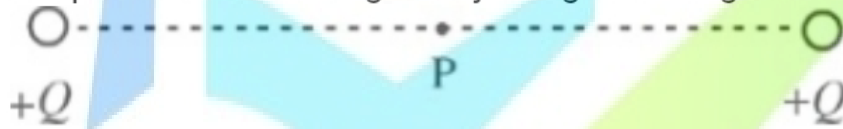


7 min



Hint

Q : The figure below shows two point charges, $+Q$ and $+Q$. If the right-hand charge were absent, the electric field at Point P due to $+Q$ would have a strength of E . With the right-hand charge in place, what is the strength of the total electric field at P, which lies at the midpoint of the line segment joining the charges?



A

0

B

$$\frac{E}{4}$$

C

$$\frac{E}{2}$$

D

 $2E$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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06 : 42



7/10



7 min



Hint

Q : A charge q_1 exerts some force on a second charge q_2 . If third charge q_3 is brought near, the force of q_1 exerted on q_2 :



increases



zero



decreases



remains unchanged

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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06 : 39



8/10



7 min



Hint

Q : What would happen to the electrostatic force between a pair of charged particles if both charges were doubled and the distance between them were also doubled?

A

It would decrease by a factor of 4

B

It would decrease by a factor of 2

C

It would remain unchanged

D

It would increase by a factor of 2.

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

4

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10

06 : 36



9/10



7 min



Hint

Q :

When a glass rod is rubbed with silk, it

A

Gains electrons from silk

B

Gives electrons to silk

C

Gains protons from silk

D

Gives protons to silk

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

4

5

6

7

8

9

10

06 : 34



10/10



7 min



Hint

Q :

Dielectric constant for metal is

A

zero

B

infinite

C

1

D

greater than 1

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

4

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QUIZ RESULT

Practice test 1 Unit 6



10



7 min



03-May-2021



0 sec



0/10



0.0%

SAEED MDCAT

Result Detail

SAEED MDCAT TEAM



SAEEDMDCAT





Correct



Unattempted



Incorrect



1/10

Q : Coulomb's force is represented by

A

$$F = \frac{kq_1q_2}{r^{-2}}$$

B

$$F = 4\pi\epsilon_0 \frac{q_1q_2}{r^2}$$

C

$$F = \frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{r^2}$$

D

$$F = \frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{r}$$

SAEED MDCAT

SAEED MDCAT TEAM

Explanation



SAEEDMDCAT

Basic information



Practice test 1 Unit 6



Correct



Unattempted



Incorrect



2/10

Q : The electric field intensity at infinite distance from point charge is

A

infinite

B

zero

C

positive

D

negative

Explanation

$$E = \frac{Kq q_0}{r^2} = \frac{Kq q_0}{\infty^2} = 0$$



SAEEDMDCAT

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5

6

7



Practice test 1 Unit 6



Correct



Unattempted



Incorrect



3/10

Q : The direction of electric field Intensity is

A

along the direction of charge

B

perpendicular to the direction of force

C

along the direction of force

D

none of these

Explanation

Book line



SAEEDMDCAT

1

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7



Practice test 1 Unit 6



Correct



Unattempted



Incorrect



4/10

Q : Static charges creates



electric field



magnetic field



both a and b



gravitational field

Explanation

Basic information



SAEEDMDCAT

1

2

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6

7



Practice test 1 Unit 6



Correct



Unattempted



Incorrect



5/10

Q : In central region of a parallel plate capacitor the electric field lines are

A

perpendicular

B

parallel

C

orthogonal

D

curved

Explanation

SAEED MDCAT TEAM

Basic concept



SAEEDMDCAT

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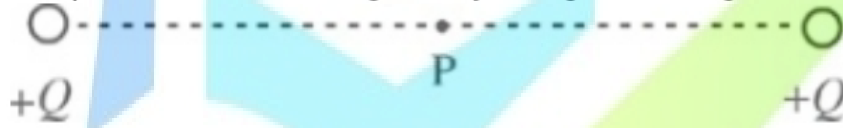


Incorrect



6/10

Q : The figure below shows two point charges, $+Q$ and $+Q$. If the right-hand charge were absent, the electric field at Point P due to $+Q$ would have a strength of E . With the right-hand charge in place, what is the strength of the total electric field at P, which lies at the midpoint of the line segment joining the charges?



A

0

B

$$\frac{E}{4}$$

C

$$\frac{E}{2}$$

D

 $2E$

Explanation



SAEEDMDCAT

There is no field between the two similar charges at centre



Practice test 1 Unit 6



Correct



Unattempted



Incorrect



7/10

Q : A charge q_1 exerts some force on a second charge q_2 . If third charge q_3 is brought near, the force of q_1 exerted on q_2 :

A

increases

B

zero

C

decreases

D

remains unchanged

Explanation



The force will still remain

$$\frac{q_1 q_2}{4 \pi \epsilon_0 r^2}$$

1

2

3

4

5

6

7



Correct



Unattempted



Incorrect



8/10

Q : What would happen to the electrostatic force between a pair of charged particles if both charges were doubled and the distance between them were also doubled?

A

It would decrease by a factor of 4

B

It would decrease by a factor of 2

C

It would remain unchanged

D

It would increase by a factor of 2.

Explanation

Applying Coulomb's law, we see that the electric force will not change.

$$F = k \frac{Qq}{r^2} = k \frac{(2Q)(2q)}{(2r)^2} = k \frac{4Qq}{4r^2} = k \frac{Qq}{r^2} =$$



Correct



Unattempted



Incorrect



9/10

Q:

When a glass rod is rubbed with silk, it

A

Gains electrons from silk

B

Gives electrons to silk

C

Gains protons from silk

D

Gives protons to silk

Explanation

On rubbing glass rod with silk, excess electron transferred from glass to silk. So glass rod becomes positive and silk becomes negative.



Practice test 1 Unit 6



Correct



Unattempted



Incorrect



10/10

Q:

Dielectric constant for metal is

A

zero

B

infinite

C

1

D

greater than 1

Explanation

Dielectric constant
 $k = \epsilon / \epsilon_0$

Permittivity of metals (ϵ) is assumed to be very high.

4

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6

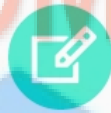
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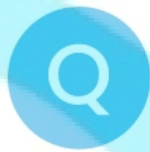
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QUIZZES

Practice test 2 Unit 6



10 Questions



7 min

Topics

Application of Gauss's law (Electric field intensity due to an infinite sheet of charge, Electric field intensity between two oppositely charged parallel plates), Capacitor (Capacitance of a capacitor and its unit), Capacitance of a parallel plate capacitor

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Start Quiz

SAEED MDCAT TEAM



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06 : 59



1/10



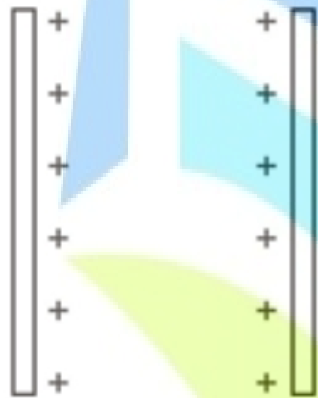
7 min



Hint

Q :

The value of electric intensity between two similarly charged parallel plates as shown in the figure according to Gauss's law is



A

$$+\frac{6}{\epsilon_0}$$

B

$$-\frac{6}{\epsilon_0}$$

C

$$\pm\frac{6}{\epsilon_0}$$

D



0

SAEEDMDCAT

1

2

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4

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6

7

06 : 56



2/10



7 min



Hint

Q : Two thin infinite parallel plates have uniform charge densities σ and σ . The electric field in the space between them is

A

$$\frac{\sigma}{2\epsilon_0}$$

B

$$\frac{\sigma}{\epsilon_0}$$

C

$$\frac{\sigma}{60}$$

D

zero

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

2

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4

5

6

7

06 : 54



3/10



7 min



Hint

Q : The electric field intensity with in a hollow charged conductor is

A

zero

B

infinite

C

maximum

D

none of these

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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4

5

6

7

06 : 52



4/10



7 min



Hint

Q : A rubber balloon is given a positive charge such that at its surface potential is +5V. What will be the value of potential and electric field strength at the centre of rubber balloon

- | V | E |
|-----|--------------------|
| -5V | 5 NC ⁻¹ |
| +5V | 5 NC ⁻¹ |
| +5V | 0 NC ⁻¹ |
| -5V | 0 NC ⁻¹ |

A

-5V, 5 NC⁻¹

B

+5V, 5 NC⁻¹

C

+5V, 0 NC⁻¹

D

-5V, 0 NC⁻¹

SAEEDMDCAT

1

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6

7

06 : 50



5/10



7 min



Hint

Q : Gaussian surface is

A

imaginary surface

B

an open surface

C

curved surface

D

plane surface

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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7

06 : 47



6/10



7 min



Hint

Q : The electric intensity due to two oppositely charged plates is _____ times due to a single plate.

A

$$\frac{1}{2}$$

B

$$\frac{1}{4}$$

C

2

D

3

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

2

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4

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7

06 : 45



7/10



7 min



Hint

Q : 1 micro-farad =



10^{-6} F



10^{-12} F



10^{-9} F



10^{-15} F

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

2

3

4

5

6

7

06 : 42



8/10



7 min



Hint

Q : The electric field between the oppositely charged plates of surface charge density σ is σ/ϵ_0 . If one of the plates is removed then electric field becomes

A

Zero

B

$2\sigma/\epsilon_0$

C

$\sigma/2\epsilon_0$

D

$\sigma/4\epsilon_0$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

4

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6

7

8

9

10

06 : 40



9/10



7 min



Hint

Q :

Change Q on a capacitor varies with voltage V as shown in the figure, where Q is taken along the X-axis and V along the Y-axis. The area of triangle OAB represents

A

Capacitance

B

Capacitive reactance

C

Magnetic field between the plates

D

Energy stored in the capacitor

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

4

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8

9

10

06 : 37



10/10



7 min



Hint

Q :

The capacity of parallel plate capacitor depends on

A

The type of metal used

B

The thickness of plates

C

The potential applied across the plates

D

The separation between the plates

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

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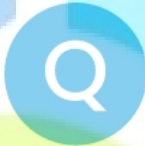
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QUIZ RESULT

Practice test 2 Unit 6



10



7 min



03-May-2021



0 sec



0/10



0.0%

SAEED MDCAT

Result Detail

SAEED MDCAT TEAM



SAEEDMDCAT





Practice test 2 Unit 6

The value of electric intensity between two similarly charged parallel plates as shown in the figure according to Gauss's law is



A

$$+\frac{6}{\epsilon_0}$$

B

$$-\frac{6}{\epsilon_0}$$

C

$$\pm\frac{6}{\epsilon_0}$$

D

$$0$$

Explanation



SAEEDMDCAT

Flux between similarly charged plates

$$\phi = 0$$

$$E A \cos \theta = 0 \therefore E = 0, A \neq 0$$



Practice test 2 Unit 6



Correct



Unattempted



Incorrect



2/10

Q : Two thin infinite parallel plates have uniform charge densities σ and σ . The electric field in the space between them is

A

$$\frac{\sigma}{2\epsilon_0}$$

B

$$\frac{\sigma}{\epsilon_0}$$

C

$$\frac{\sigma}{60}$$

D

zero

Explanation



SAEEDMDCAT

Text book information



Practice test 2 Unit 6



Correct



Unattempted



Incorrect



3/10

Q : The electric field intensity with in a hollow charged conductor is



zero



infinite



maximum



none of these

Explanation

$$\vec{E} \cdot \vec{A} = \frac{\theta}{\epsilon_0} = \frac{0}{\epsilon_0}$$

$$\vec{E} \cdot \vec{A} = 0 \quad \vec{E} = 0, \vec{A} \neq 0$$



Practice test 2 Unit 6



Correct



Unattempted



Incorrect



4/10

Q : A rubber balloon is given a positive charge such that at its surface potential is +5V. What will be the value of potential and electric field strength at the centre of rubber balloon

V E

-5V 5 NC⁻¹

+5V 5 NC⁻¹

+5V 0 NC⁻¹

-5V 0 NC⁻¹

A

-5V, 5 NC⁻¹

B

+5V, 5 NC⁻¹

C

+5V, 0 NC⁻¹

D

-5V, 0 NC⁻¹

Explanation

1

2

3

4

5

6

7



Q : A rubber balloon is given a positive charge such that at its surface potential is +5V. What will be the value of potential and electric field strength at the centre of rubber balloon

- | V | E |
|-----|--------------------|
| -5V | 5 NC ⁻¹ |
| +5V | 5 NC ⁻¹ |
| +5V | 0 NC ⁻¹ |
| -5V | 0 NC ⁻¹ |

A

-5V, 5 NC⁻¹

B

+5V, 5 NC⁻¹

C

+5V, 0 NC⁻¹

D

-5V, 0 NC⁻¹

SAEED MDCAT

SAEED MDCAT TEAM

Explanation



SAEEDMDCAT

- $V_{\text{inside}} = V_{\text{surface}} = \text{constant}$

- $E = 0 (q_{\text{inside}} = 0)$



Practice test 2 Unit 6



Correct



Unattempted



Incorrect



5/10

Q : Gaussian surface is

A

imaginary surface

B

an open surface

C

curved surface

D

plane surface

Explanation

Gaussian surface is an imaginary closed surface



SAEEDMDCAT

1

2

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Practice test 2 Unit 6



Correct



Unattempted



Incorrect



6/10

Q : The electric intensity due to two oppositely charged plates is _____ times due to a single plate.



$\frac{1}{2}$



$\frac{1}{4}$



2



3

Explanation

For single charged plate

$$E_s = \frac{\sigma}{2\epsilon_0}$$

For two opposite plates

$$E = \frac{\sigma}{\epsilon_0}$$

It is clear that

$$E_{\text{fortwooppositeplates}} = 2 \times E_{\text{single}}$$

1

2

3

4

5

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7



Practice test 2 Unit 6



Correct



Unattempted



Incorrect



7/10

Q : 1 micro-farad =



10^{-6} F



10^{-12} F



10^{-9} F



10^{-15} F

Explanation

$$1\mu F = 10^{-6} F$$



SAEEDMDCAT

1

2

3

4

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Practice test 2 Unit 6



Correct



Unattempted



Incorrect



8/10

Q : The electric field between the oppositely charged plates of surface charge density σ is σ/ϵ_0 . If one of the plates is removed then electric field becomes

A

Zero

B

$2\sigma/\epsilon_0$

C

$\sigma/2\epsilon_0$

D

$\sigma/4\epsilon_0$

Explanation

SAEED MDCAT TEAM

2nd Application of Gauss's law



Practice test 2 Unit 6



Correct



Unattempted



Incorrect



9/10

Q :

Change Q on a capacitor varies with voltage V as shown in the figure, where Q is taken along the X-axis and V along the Y-axis. The area of triangle OAB represents

A

Capacitance

B

Capacitive reactance

C

Magnetic field between the plates

D

Energy stored in the capacitor

Explanation



SAEEDMDCAT

$U = \frac{1}{2}QV = \text{Area of triangle OAB}$

4

5

6

7

8

9

10



Practice test 2 Unit 6



Correct



Unattempted



Incorrect



10/10

Q:

The capacity of parallel plate capacitor depends on

A

The type of metal used

B

The thickness of plates

C

The potential applied across the plates

D

The separation between the plates

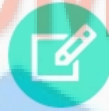
Explanation



$$C = \frac{K\epsilon_0 A}{d}$$

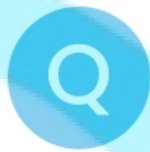
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QUIZZES

Practice test 3 Unit 6



10 Questions



7 min

Topics

Capacitance of a parallel plate capacitor

Start Quiz

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

06 : 59



1/10



7 min



Hint

Q :

The energy of a charged capacitor is given by the expression (q = charge on the conductor and C = its capacity)

A

$$q^2/2C$$

B

$$q^2/C$$

C

$$2qC$$

D

$$q/2C^2$$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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06 : 57



2/10



7 min



Hint

Q :

The capacity of a condenser is 4×10^{-6} farad and its potential is 100 volts . The energy released on discharging it fully will be



0.02 Joule



0.04Joule



0.025Joule



0.05Joule

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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7

06 : 54



3/10



7 min



Hint

Q :

A parallel plate condenser has a capacitance $50\mu\text{F}$ in air and $110\mu\text{F}$ when immersed in an oil. The dielectric constant 'k' of the oil is



0.45



0.55



1.10



2.20

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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7

06 : 51



4/10



7 min



Hint

Q :

The capacity of a parallel plate condenser is C . Its capacity when the separation between the plates is halved will be



4C



2C



$C/2$



$C/4$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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06 : 49



5/10



7 min



Hint

Q :

A parallel plate capacitor is immersed in an oil of dielectric constant 2. The field between the plates is

A

Increased proportional to 2

B

Decreased proportional to $1/2$

C

Increased proportional to $\sqrt{2}$

D

Decreased proportional to $1/\sqrt{2}$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

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06 : 47



6/10



7 min



Hint

Q :

A capacitor of capacity C has charge Q and stored energy is W . If the charge is increased to $2Q$, the stored energy will be



$2W$



$W/2$



$4W$



$W/4$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

2

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06 : 45



7/10



7 min



Hint

Q :

The capacity and the energy stored in a parallel plate condenser with air between its plates are respectively C_0 and W_0 . If the air is replaced by glass (dielectric constant = 5) between the plates, the capacity of the plates and the energy stored in it will respectively be



$5C_0, 5W_0$



$5C_0, W_0/5$



$C_0/5, 5W_0$



$C_0/5, W_0/5$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

2

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7

06 : 42



8/10



7 min



Hint

Q :

One plate of parallel plate capacitor is smaller than other, then charge on smaller plate will be

A

Less than other

B

More than other

C

Equal to other

D

Will depend upon the medium between them

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

4

5

6

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8

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10

06 : 39



9/10



7 min



Hint

Q :

The intensity of electric field at a point between the plates of a charged capacitor

A

Is directly proportional to the distance between the plates

B

Is inversely proportional to the distance between the plates

C

Is inversely proportional to the square of the distance between the plates

D

Does not depend upon the distance between the plates

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

4

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06 : 36



10/10



7 min



Hint

Q :

When a lamp is connected in series with capacitor, then

A

Lamp will not glow

B

Lamp will burst out

C

Lamp will glow normally

D

None of these

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

4

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6

7

8

9

10



QUIZ RESULT

Practice test 3 Unit 6



10



7 min



03-May-2021



0 sec



0/10



0.0%

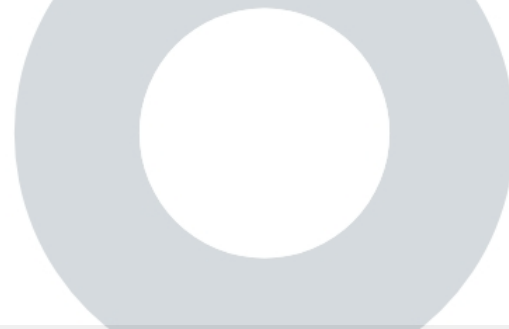
SAEED MDCAT

Result Detail

SAEED MDCAT TEAM



SAEEDMDCAT





Practice test 3 Unit 6



Correct



Unattempted



Incorrect



1/10

Q :

The energy of a charged capacitor is given by the expression (q = charge on the conductor and C = its capacity)



$$q^2/2C$$



$$q^2/C$$



$$2qC$$



$$q/2C^2$$

Explanation



SAEEDMDCAT

$$q = CV$$

and

$$U = \frac{1}{2} CV^2 = \frac{q^2}{2C}$$

1

2

3

4

5

6

7



Practice test 3 Unit 6



Correct



Unattempted



Incorrect



2/10

Q :

The capacity of a condenser is 4×10^{-6} farad and its potential is 100 volts . The energy released on discharging it fully will be



A

0.02 Joule



B

0.04Joule



C

0.025Joule



D

0.05Joule

Explanation



SAEEDMDCAT

$$U = \frac{1}{2} CV^2 = \frac{1}{2} \times 4 \times 10^{-6} \times (100)^2 = 0.02J$$

1

2

3

4

5

6

7



Practice test 3 Unit 6



Correct



Unattempted



Incorrect



3/10

Q :

A parallel plate condenser has a capacitance $50\mu\text{F}$ in air and $110\mu\text{F}$ when immersed in an oil. The dielectric constant 'k' of the oil is

A

0.45

B

0.55

C

1.10

D

2.20

Explanation



SAEEDMDCAT

$$C_{\text{medium}} = K C_{\text{air}} \Rightarrow K = \frac{C_{\text{medium}}}{C_{\text{air}}} =$$

1

2

3

4

5

6

7



Practice test 3 Unit 6



Correct



Unattempted



Incorrect



4/10

Q :

The capacity of a parallel plate condenser is C . Its capacity when the separation between the plates is halved will be

A

4C

B

2C

C

C/2

D

C/4

Explanation



SAEEDMDCAT

$$C = \frac{\epsilon_0 A}{d} \cdot C' = \frac{\epsilon_0 A}{d/2} \quad \text{p } 8r^3 = R^3$$

1

2

3

4

5

6

7



Practice test 3 Unit 6



Correct



Unattempted



Incorrect



5/10

Q:

A parallel plate capacitor is immersed in an oil of dielectric constant 2. The field between the plates is

A

Increased proportional to 2

B

Decreased proportional to $1/2$

C

Increased proportional to $\sqrt{2}$

D

Decreased proportional to $1/\sqrt{2}$

Explanation



SAEEDMDCAT

$$E_{\text{medium}} = \frac{E_{\text{air}}}{K} = \frac{E}{2}$$



Practice test 3 Unit 6



Correct



Unattempted



Incorrect



6/10

Q :

A capacitor of capacity C has charge Q and stored energy is W . If the charge is increased to $2Q$, the stored energy will be

A

$2W$

B

$W/2$

C

$4W$

D

$W/4$

Explanation



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$$W = Q^2 / 2C$$

$$W' = 4W$$

1

2

3

4

5

6

7



Incorrect



7/10

Q :

The capacity and the energy stored in a parallel plate condenser with air between its plates are respectively C_0 and W_0 . If the air is replaced by glass (dielectric constant = 5) between the plates, the capacity of the plates and the energy stored in it will respectively be

A

 $5C_0, 5W_0$

B

 $5C_0, W_0/5$

C

 $C_0/5, 5W_0$

D

 $C_0/5, W_0/5$

Explanation

When a dielectric K is introduced in a parallel plate capacitor its capacity becomes K times.
Hence

$$C' = 5C_0 \quad \text{Energy stored } W_0 = \frac{q^2}{2C_0} \quad \text{V}$$



Practice test 3 Unit 6



Correct



Unattempted



Incorrect



8/10

Q :

One plate of parallel plate capacitor is smaller than other, then charge on smaller plate will be

A

Less than other

B

More than other

C

Equal to other

D

Will depend upon the medium between them

Explanation

Because the charges are produced due to induction and moreover the net charge of the condenser should be zero.

4

5

6

7

8

9

10



Practice test 3 Unit 6



Correct



Unattempted



Incorrect



9/10

Q :

The intensity of electric field at a point between the plates of a charged capacitor

A

Is directly proportional to the distance between the plates

B

Is inversely proportional to the distance between the plates

C

Is inversely proportional to the square of the distance between the plates

D

Does not depend upon the distance between the plates

Explanation

Electric field between the plates of parallel plate capacitor is uniform and it doesn't depend upon distance.

4

5

6

7

8

9

10



Practice test 3 Unit 6



Correct



Unattempted



Incorrect



10/10

Q :

When a lamp is connected in series with capacitor, then

A

Lamp will not glow

B

Lamp will burst out

C

Lamp will glow normally

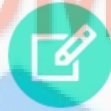
D

None of these

Explanation

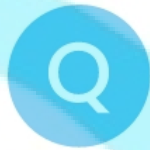
When a lamp is connected to D.C. line with a capacitor. It will form an open circuit. Hence, the lamp will not glow

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QUIZZES

Practice test 4 Unit 6



10 Questions



7 min

Topics

Combination of capacitors, Energy Stored in a Capacitor, Charging and Discharging a Capacitor

Start Quiz

SAEED MDCAT

SAEED MDCAT TEAM



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06 : 58



1/10



7 min



Hint

Q : If RC is small, then capacitor will be charged and discharged



slowly



quickly



with medium speed



with constant speed

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

2

3

4

5

6

7

06 : 55



2/10



7 min



Hint

Q : Equivalent capacitance is greater than individual capacitances in

A

series combination

B

Parallel combination

C

both a and b

D

none of these

SAEED MDCAT

SAEED MDCAT TEAM



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1

2

3

4

5

6

7

06 : 53



3/10



7 min



Hint

Q : Three capacitors of capacitance $12\ \mu\text{F}$ each are available. The minimum and maximum capacitances which may be obtained from these are



12 μF , 36 μF



4 μF , 12 μF



4 μF , 36 μF



0 μF , $\infty\ \mu\text{F}$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

2

3

4

5

6

7

06 : 51



4/10

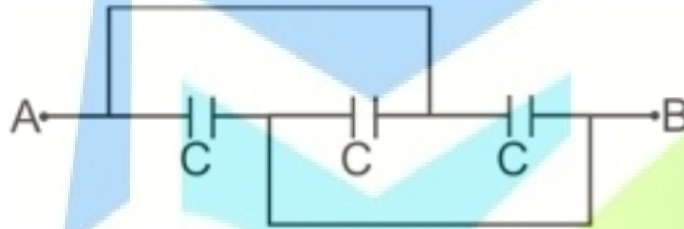


7 min



Hint

Q : Three equal capacitors, each with capacitance C are connected as shown in fig. the equivalent capacitance between A and B is:



A

 C

B

 $C/3$

C

 $3C$

D

 $3/2C$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

2

3

4

5

6

7

06 : 48



5/10



7 min



Hint

Q : Two capacitors of $1\mu\text{F}$ and $2\mu\text{F}$ are connected in series across a 100V supply. The energy stored in the system is



2/300



1/100



1/300



3/100

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

2

3

4

5

6

7

06 : 46



6/10



7 min



Hint

Q : Capacitor stores energy in the form of

A

electric field

B

magnetic field

C

both of these

D

gravitational field

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

2

3

4

5

6

7

06 : 43



7/10

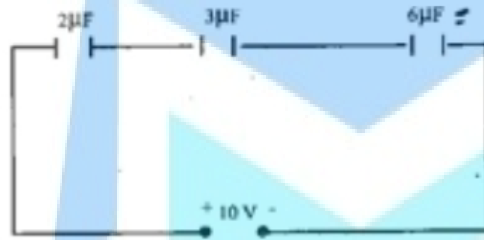


7 min



Hint

Q : In the figure below , the charge on $3\ \mu\text{F}$ capacitor is



A

 $5\ \mu\text{C}$

B

 $10\ \mu\text{C}$

C

 $3\ \mu\text{C}$

D

 $6\ \mu\text{C}$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

1

2

3

4

5

6

7

06 : 40



8/10



7 min



Hint

Q : When potential in a capacitor rises from 0 to V , then average potential difference is



V



$-V$



$\frac{V+V}{2}$



$\frac{V}{2}$

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

4

5

6

7

8

9

10

06 : 38



9/10



7 min



Hint

Q : The product RC is called

A

decay constant

B

constant

C

time constant

D

resistance of capacitor

SAEED MDCAT

SAEED MDCAT TEAM



SAEEDMDCAT

4

5

6

7

8

9

10

06 : 36



10/10



7 min



Hint

Q : A person uses five capacitors of same value such that he combines them in series and then in parallel combination. What is the ratio of maximum to minimum capacitance be obtained?



nC



$\frac{C}{n}$



n^2C



n^2

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SAEED MDCAT TEAM



SAEEDMDCAT

4

5

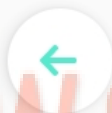
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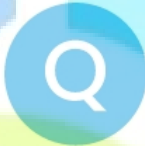
9

10



QUIZ RESULT

Practice test 4 Unit 6



10



7 min



03-May-2021



0 sec



0/10



0.0%

SAEED MDCAT

Result Detail

SAEED MDCAT TEAM



SAEEDMDCAT





Practice test 4 Unit 6



Correct



Unattempted



Incorrect



1/10

Q : If RC is small, then capacitor will be charged and discharged



slowly



quickly



with medium speed



with constant speed

Explanation

$$t = RC$$

If 'RC' product is small then t (charging time) is small

1

2

3

4

5

6

7



Practice test 4 Unit 6



Correct



Unattempted



Incorrect



2/10

Q : Equivalent capacitance is greater than individual capacitances in

A

series combination

B

Parallel combination

C

both a and b

D

none of these

Explanation

$$C_{eq} = C_1 + C_2 + C_3$$

$$C_{eq} > C_1, C_{eq} > C_2, C_{eq} > C_3$$

1

2

3

4

5

6

7



Practice test 4 Unit 6



Correct



Unattempted



Incorrect



3/10

Q : Three capacitors of capacitance $12 \mu\text{F}$ each are available. The minimum and maximum capacitances which may be obtained from these are

A

$12 \mu\text{F}, 36 \mu\text{F}$

B

$4 \mu\text{F}, 12 \mu\text{F}$

C

$4 \mu\text{F}, 36 \mu\text{F}$

D

$0 \mu\text{F}, \infty \mu\text{F}$

Explanation

$$\bullet C_{\text{max}} = C_{\text{parallel}} = nc = 3(12) = 36 \mu\text{F}$$

$$\bullet C_{\text{min}} = C_{\text{series}} = \frac{c}{n} = \frac{12}{3} = 4 \mu\text{F}$$



Practice test 4 Unit 6



Correct



Unattempted

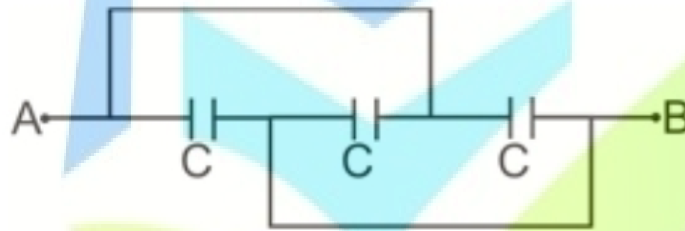


Incorrect



4/10

Q : Three equal capacitors, each with capacitance C are connected as shown in fig. the equivalent capacitance between A and B is:



A

C

B

$C/3$

C

$3C$

D

$3/2C$

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Explanation



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The combination is equivalent to 3 capacitors in parallel. Therefore net capacitance between A and B = $3C$

1

2

3

4

5

6

7



Practice test 4 Unit 6

Correct

Unattempted



Incorrect



5/10

Q : Two capacitors of $1\mu\text{F}$ and $2\mu\text{F}$ are connected in series across a 100V supply. The energy stored in the system is

A

2/300

B

1/100

C

1/300

D

3/100

Explanation

SAEED MDCAT TEAM

$$\begin{aligned} E &= \frac{1}{2} CV^2 = \frac{1}{2} \left(\frac{(1)(2)}{1+2} \times 10^{-6} \right) (100)^2 \\ &= \frac{1}{2} \left(\frac{2}{3} \times 10^{-6} \right) (10000) \\ &= \frac{1}{3} \times 10^{-2} = \frac{1}{300} \end{aligned}$$



Practice test 4 Unit 6



Correct



Unattempted



Incorrect



6/10

Q : Capacitor stores energy in the form of

A

electric field

B

magnetic field

C

both of these

D

gravitational field

Explanation

Capacitor is a device which store energy with the help of stationary charges and stationary charges produce electric field.

1

2

3

4

5

6

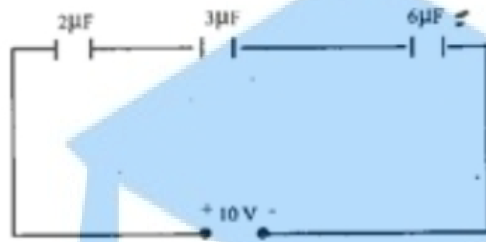
7



Practice test 4 Unit 6

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Q : In the figure below , the charge on $3\ \mu\text{F}$ capacitor is



A

$5\ \mu\text{C}$

B

$10\ \mu\text{C}$

C

$3\ \mu\text{C}$

D

$6\ \mu\text{C}$

Explanation

$$Q = C_{\text{eq}} V \dots (i)$$

$$\frac{1}{C_{\text{eq}}} = \frac{1}{2} + \frac{1}{3} + \frac{1}{6}$$

$$C_{\text{eq}} = 1\ \mu\text{F}$$

$$Q = (1\ \mu\text{F})(10\text{V})$$

$$Q = 10\ \mu\text{C}$$



Practice test 4 Unit 6



Correct



Unattempted



Incorrect



8/10

Q : When potential in a capacitor rises from 0 to V, then average potential difference is

A

V

B

-V

C

$$\frac{V+V}{2}$$

D

$$\frac{V}{2}$$

Explanation

$$V_{av} = \frac{0+V}{2} = \frac{V}{2}$$

4

5

6

7

8

9

10



Practice test 4 Unit 6



Correct



Unattempted



Incorrect



9/10

Q : The product RC is called

A

decay constant

B

constant

C

time constant

D

resistance of capacitor

Explanation

$$RC = \left(\frac{V}{I}\right)\left(\frac{Q}{V}\right) = \frac{Q}{I} \therefore V = IR \rightarrow R = \frac{V}{I}$$

$$\text{As, } I = \frac{Q}{t} \rightarrow t = \frac{Q}{I} \quad Q = CV \rightarrow C = \frac{Q}{V}$$

so,

$$\boxed{RC = \frac{Q}{I} = t}$$



Incorrect



10/10

Q : A person uses five capacitors of same value such that he combines them in series and then in parallel combination. What is the ratio of maximum to minimum capacitance be obtained?

A

 nC

B

 $\frac{C}{n}$

C

 n^2C

D

 n^2

Explanation

$$C_{\max} = C_{\text{parallel}} = nC$$

$$C_{\min} = C_{\text{series}} = \frac{C}{n}$$

so,

$$\frac{C_{\max}}{C_{\min}} = \frac{nC}{C/n} = n^2$$